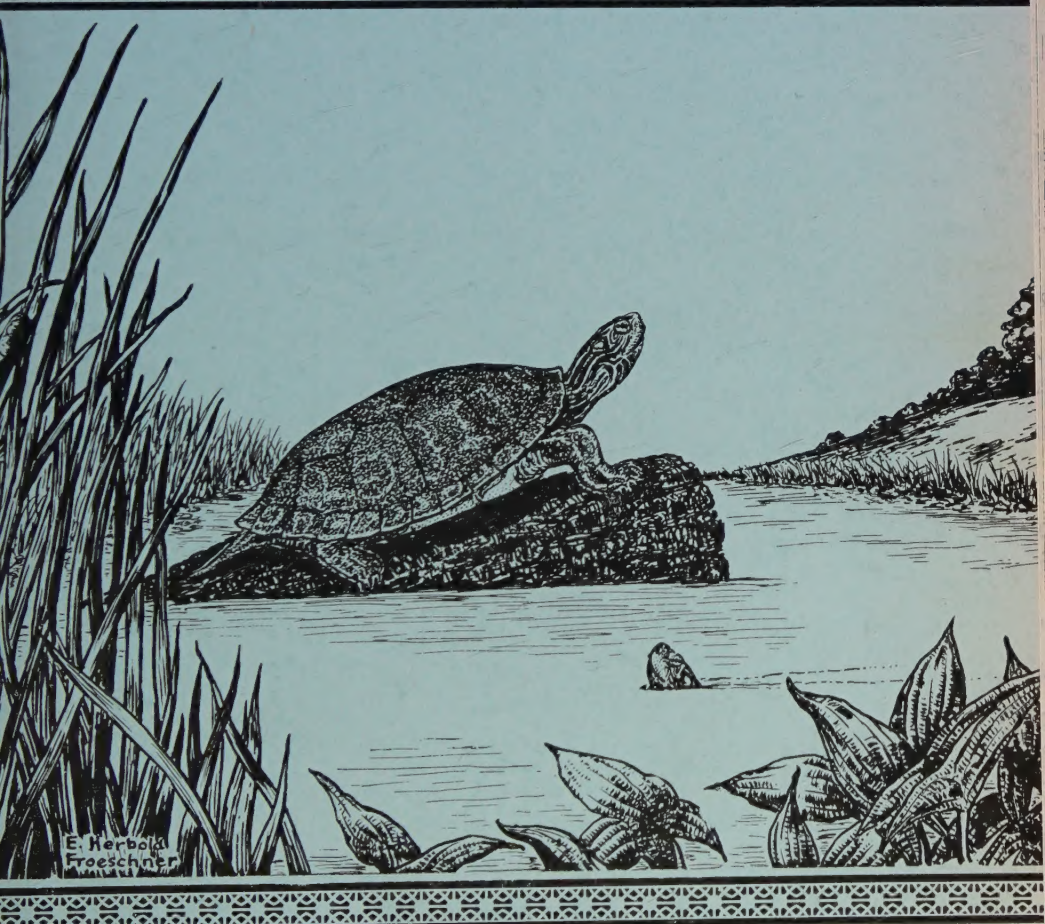
The CHICAGO NATURALIST



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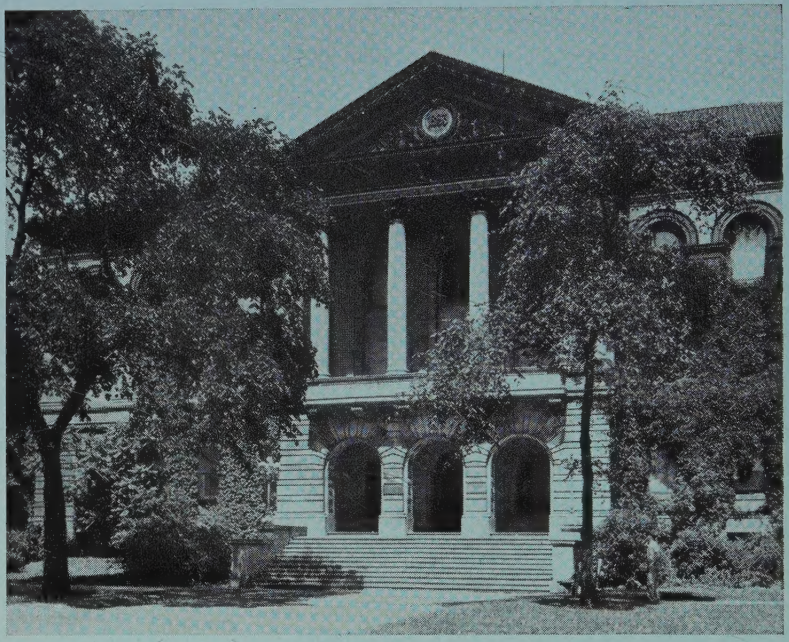

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Casa Grande from the northeast.

Modern Inhabitants of Prehistoric Casa Grande[1]

NATT N. DODGE[2]

More than 500 years ago, a full century before Columbus reached the Antilles in search of the Indies and Cathay, Indians were farming what is now the fertile Casa Grande Valley of south-central Arizona. Equipped with crude stone implements and baskets woven from the fibers of desert vegetation, they scooped from the soil great canals in which they led water from the river and distributed it to their fields of corn, beans, pumpkins and cotton. Here and there mud-walled villages of one and two-story, flat-roofed, clay-plastered houses dotted the desert.

Within one of these villages there was a blocky, four-story structure that stood more than thirty feet high. From the vantage point of its flat, balustraded roof could be seen the surrounding fields where lightly-clad, dark-skinned people tended their crops, repaired their houses, made pottery, pulverized corn, and otherwise carried on the daily activities of a happy, industrious settlement.

Today the roofless, storm-furrowed walls of that same adobe building, surrounded by the remnants of the village, still stand; and it is protected from further ravages of weather by a pagoda-like roof. Spectacular remnant of a virile and vigorous civilization, and a landmark for Spanish and American pioneers, the Big House, with approximately three quarters of a square mile of surrounding desert containing other less imposing ruins, is being preserved by the government. It is known as Casa Grande National Monument. Thousands of visitors annually come to see these ruins and learn from National Park Service rangers what has been discovered about the prehistoric people who built these massive walls.

To the casual Casa Grande visitor interested in the absorbing epic of a prehistoric civilization, the structure seems peopled only by the spirits of dark-skinned aborigines. Most moderns who have visited its weathered walls, or touched with awe the ancient plaster applied by hands that have passed into oblivion centuries ago, think of this structure as a dead, abandoned shell. Yet these seemingly deserted walls teem with life, quiet but alert. Deep intrigues, violent battles, births and deaths take place here; all of the various and detailed activities that make up the lives of thousands of creatures go on continuously within and upon these mute walls. True, Casa Grande has a glorious past, but to the intent observer it has an interesting and sometimes exciting present.

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[1] Reprinted, with permission, from *National Parks Magazine*, no. 80, 1945. Photographs by courtesy of National Park Service.

[2] Associate Naturalist, National Park Service, Santa Fe, New Mexico.

As the visitor enters the silent gloom of the ancient structure, his nostrils are assailed by a musty odor. "My goodness, this place smells old" is the usual comment. Old, yes; but the smell is not one of age, for within the weather-worn cracks and crevices of the building thousands of bats now make their home. If one stands quiet for a moment, what has seemed a ghostly ruin, gradually becomes alive. Press your ear to the wall and you will hear faint scratchings and rustlings. Squeaks break the silence as the bats, packed into the crevices that honeycomb the walls, move about, irritated by parasitic insects or perhaps seeking more comfortable positions.

The time of day to see the bats of Casa Grande is early evening. Soon after the sun has set and the distant ridges of the Sacaton Peaks stand silhouetted against the western sky, sounds become more audible.

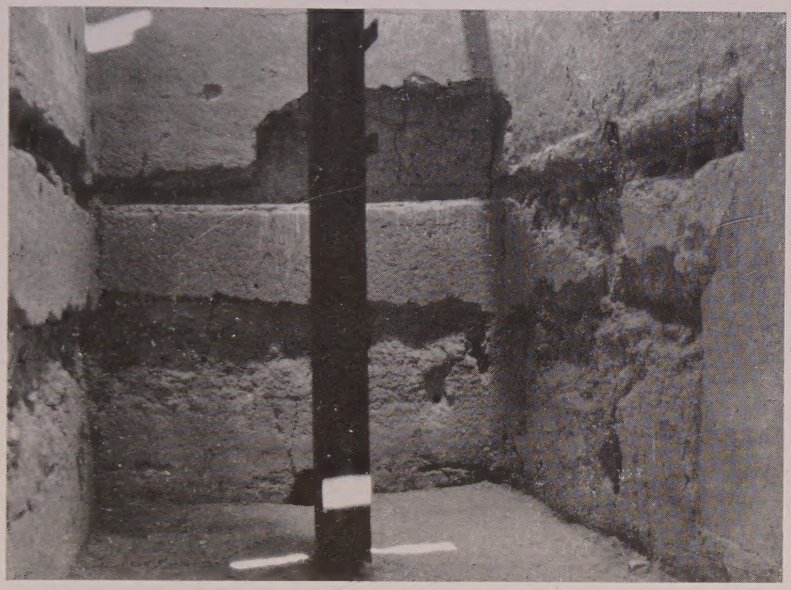
First from one crack, then from another, the small, dark creatures take to the air in graceful, noiseless flight. From room to room through the crumbling doorways, then forth into the desert dusk they flit. Faster they come, shoving one another in their eagerness to be out; boiling from cracks in the corners of the rooms and in thinner streams from crevices and beam sockets. The rooms are full of them, and the air is alive with their high-pitched voices and the faint whisper of wings. From all sides of the building they sweep in waves, in twisting ropes, swirling and tossing like leaves before an autumn wind, their wings pulsing in erratic flight and their tiny bodies dancing against the gold and orange of the sunset.

Few visitors see these bat flights, for by sundown most travelers have departed. In the winter, which in southern Arizona is the tourist season, the bats are in hibernation, although by late February the first weak flights begin. Normally the bats are out in force by April, and from then until early November the flights are of nightly occurrence. How far some of these small mammals wander during the hours of darkness, no one knows, but the number of insects which they consume each night might run into the millions.

In June the young are born—tiny, mouse-like creatures well protected in the network of cracks in the thick walls. But wait! Are they well protected? Occasionally, gliding along a ledge or slipping into a crack, there can be seen one of those desert snakes known as a red racer or whipsnake. The species is harmless to man, but it is not at all averse to making a meal on a luckless bat cornered deep within the walls.

Although the preying upon bats of Casa Grande by racers is natural, the pursuit of bats by snakes is unusual, because the environments of bats and snakes are normally quite different. Casa Grande is one of the few places where this can occur.

Other modern inhabitants of Casa Grande are the great horned owls which have nested atop the east wall of the center tier of rooms for at

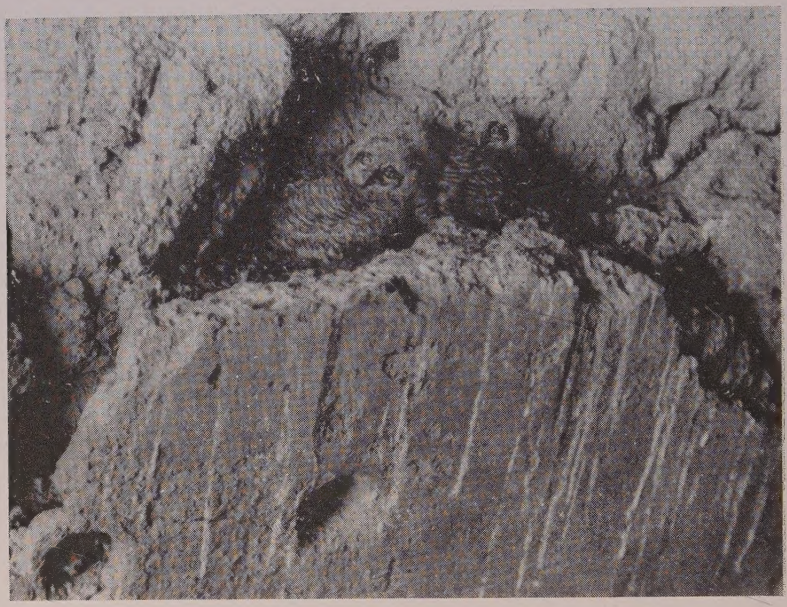


Central room of Casa Grande, showing crevices and rafter holes.

least thirty years. (Not the same individual birds, of course.) Each spring from one to four young are reared, the evening activities of the growing brood providing interest to the personnel of the monument. Like stoop-shouldered little old men, the young owls pace about on top of the walls, going through various setting-up exercises with sound effects, and making short practice flights from wall-top to wall-top. After the juveniles have learned to hunt and capture their food, the parents take a vacation. When they return in August or September, the young go out into the world to shift for themselves. For several consecutive years, in an effort to determine what becomes of the young owls, Casa Grande rangers have banded the nestlings. To date, however, none of the banded birds has been reported.

Throughout the winter months, the adults are observed daily, perched on some rafter in the superstructure of the modern shelter. At dusk each evening they glide off on hunting expeditions in the creosote-bush and mesquite jungle that covers the monument. Analysis of the pellets (undigestible material regurgitated by the owls and found beneath their roosts) indicates that their food consists chiefly of desert rabbits and mice with an occasional bird. There is almost no evidence that they raid nearby hen-roosts as some local farmers assume.

Although owls have been recorded in Casa Grande for a longer period of time than any other species, they are by no means the only birds



Young horned owls in their "nest" near the top of the east wall of the center room.

that take advantage of the protection afforded by the ruin. Rafter holes, that centuries ago held beams that supported the brush-and-mud floors, now provide nest sites. A pair of Say's phoebes has used one of these rafter holes, in the east room year after year, rearing two broods each spring. Phoebes are winter residents of the southland, but after bringing up their families, young and old alike are seen no more in the vicinity of the Big House for a month or six weeks. Perhaps the ash-throated flycatchers, somewhat similar in appearance to their phoebe relatives, are too boisterous and noisy for them. The ash-throats arrive late in March attracting considerable attention to themselves by their sharp calls and by their habit of dashing about chasing one another with loud snapping of beaks.

For some unknown reason, the phoebes abandoned their long-used nest in the east room and in the spring of 1941 reared their young in a new location in the south room. In the spring of 1942 they were back again in their old nest. Also in 1941, three pairs of linnets took up nesting quarters in Casa Grande. Although linnets and house sparrows have, for years, nested among the beams and angles of the shelter above the ruin, this is the first record of nests of either species in the crevices of the ruin itself.

Another group of tenants which has, for many years, nested within Casa Grande are the rough-winged swallows. Although not as punctual

as the much publicized swallows from Capistrano, the rough-wings arrive between February 15 and 25 each year. They spend much of the time flying in groups of from two to six, and often speeding through the broken doorways and echoing rooms of the ruin with a whistle of wings that startles the visitor absorbed in the ranger's story of the lives and activities of the prehistoric Indians. Several swallows have been captured and banded and recaptured several years later. When the rough-wings leave in late June or July, the somber walls seem stern without their friendly notes.

A record of the various animals that have established themselves within the shelter of Casa Grande would be incomplete without the mention of the many-legged creatures that live there. The ruin provides shelter for a great number of spiders whose tunnel-like webs may be seen in the network of small cracks in the outer walls. During the daylight hours, these tunnels appear to be without tenants, but after dark a flashlight will reveal the mouth of each webbed tube filled with the puffy body of its owner.

In the relatively flat desert such as the Casa Grande Valley, stray swarms of house-hunting honey bees sometimes consider the deep cracks and weather-worn doorways of the great ruin a desirable retreat from the burning sun and suffocating duststorms of the desert summer. That the ruin has proved a haven for such swarms which have taken possession and started housekeeping in their customarily energetic manner, has been discovered with some pain by more than one ranger. Not satisfied with confining their activities to their own niche, the bees try to keep human visitors restricted to other parts of the ruin, thus running afoul of the Park Service men whose duty it is to look after the welfare of visitors as well as to protect the ruins. No effort has been made by the Service to interfere with the use of Casa Grande by such squatters as the bats, the snakes, the owls, and the spiders; but because of their uncontrolled desire to take pot shots at the visiting public, bees have been placed on the government's black list, and any swarms that settle in the ruin may expect to receive orders to vacate as soon as they are discovered. Honey is not considered acceptable rent payment by Uncle Sam.

The job of enforcing this undesirable tenant regulation is not easy, so that an experienced bee man is usually called upon to do the ousting. Well entrenched in the deep cracks, the bees are difficult to drive out and entice into a standard hive in which they may be taken to the more suitable location. Thoroughly aroused by the efforts of the beekeeper, they customarily put up well organized opposition. Ouster proceedings are undertaken in the evening immediately following the departure of the last visitor; but it is a rare occasion, following such an evacuation, that an angry remnant of the colony is not on hand the next morning to extend a warm greeting to the ranger who warily approaches the ruin with the day's first party of visitors.

Adventures at a Feeding Shelf

Margaret Morse Nice

Fired by the sight of half a dozen cardinals and a number of juncos, and undeterred by a crowd of English sparrows, I installed a feeding shelf with a small pull-string trap opposite my study window. Soon the English sparrows began to assemble and before long two cardinals arrived. After a while I discovered a bird in the trap, a tufted titmouse, the first I had ever caught. It screeched and squawked and pecked with great spirit, and when released, flew to a burdock and worked at its band.

Our most decorative boarder was the cardinal. At our feeding shelf in Oklahoma we never had more than one pair of cardinals at a time; two of our five males had been exceedingly disagreeable to all other birds frequenting the lunch counter, except mockingbirds of whom they stood in awe; only one had been pleasant to his future mate during the winter. Interpont, however, the forty acres of flood plain between our house and the Olentangy River, in Columbus, Ohio, was rather a winter resort for cardinals, supporting thirty to forty during the cold weather, while in spring not more than five or six pairs remained.

These cardinals were more amiable than their western relatives; handsome males ate in peace with English sparrows all about them. Once I did see a difference between two: they raised their crests and spread out their wings; one rushed at the other and drove him off. The relations at this season between the sexes would have met with the approval of Dr. Schjelderup-Ebbe, who first put in scientific print the tale of the peck-order among farmyard biddies; the males were on top, but exercised their lordship with moderation. One morning two lovely cardinals came to the shelf, puffing themselves out to warm their toes. The lady waited modestly to one side; soon the gentleman hopped over and drove her off; she retired to the ground.

Once a female cardinal was eating in the trap, while a junco patiently waited outside. A male cardinal had no intention of waiting; but dashed at the inoffensive lady who could not escape him in the trap; as soon as she could, she slipped out.

Another day when I was watching, a banded male cardinal was eating at leisure in the trap; he came out and a song sparrow went to the entrance. The cardinal returned, made a pass at the song sparrow, which dove into the trap, followed by the cardinal; I pulled the string. For a moment both were frightened; then the cardinal started to eat and the song sparrow followed his example. The next minute, however, another male cardinal alighted on the top of the cage, screeching and threatening them, much to their distress.

Once when a female was caught, another female darted at her from the outside. In February I often noted females chasing each other, at times giving an unlovely snarl; they drove each other far more viciously than the males drove them or other males. I never saw a female cardinal drive a male. Sometimes they went for juncos, but they feared blue jays. Impudent English sparrows defied the female cardinals and even chased them off the shelf!

I always slipped on heavy gloves before taking a cardinal from the trap, but even these were not always sufficient protection. My small daughter Janet would hasten to the rescue and present my wrathful subject with a pencil to occupy his or her bill, a ruse that usually succeeded.

In Oklahoma when the cardinal that owned our feeding shelf would find the water frozen, he would voice his displeasure with loud peeps. In Ohio a female was once peeping insistently on the shelf and behold the door had fallen shut so she could get no food. Another time a male peeped indignantly at discovering the sunflower seeds were gone; he picked up a shuck, dropped it, and left. Another male seemed so put out by the failure of the food supply that he darted with outstretched wings at any English sparrow that came near.

In spring only one pair of cardinals patronized the shelf; in September they were still being pursued by well grown children. On the 4th the dilapidated-looking male was accompanied by two large daughters with horn-colored bills; they teased without intermission. The next day he was followed by an enthusiastic son, all pink but head and bill. Son teased in the lattice, father dashed for him; son begged on undisturbed. Father flew to the honey locust nearby and got a green caterpillar; son hurried after and implored his charity, whereupon father relented.

Winter, of course, was the time when the trap was truly popular. It was a constant show on March 3, 1928 with snow covering the ground. The six cardinals took turns at the provender under the shelf; tufted tits darted in and out of the trap; a downy woodpecker worked earnestly at the suet; two juncos and a pair of white-breasted nuthatches patronized the trap, while little chickadee hoped for a chance at the sunflower seeds, but had to content himself with the suet. Once a flaming cardinal was pecking at one side of this warming food and the tiny chickadee at the other. Another time it was an English sparrow and a Carolina wren that shared the feast.

That first winter we were favored by the presence of two hairy woodpeckers, besides the eight species mentioned above. Once a sparrow hawk stooped at an English sparrow, missing it, but greatly upsetting the rowdy crowd. It was in this trap that I first caught my song sparrow, Uno, on March 26, 1928, and to which he returned March 9, 1929.

A Carolina chickadee came to the trap from February 25 on, but proved difficult to catch. It was not until March 11 that I was successful; it pecked me fiercely, then pounded on my finger nail. When released it flew to the nearest tree, saying *chee chee chee;* then worked away at its band. It worked so hard that it lost its balance and fluttered to a lower perch holding the band in its beak. A tufted tit seemed much interested in the performance and approached within a few inches. Later I was pleased to see my banded chickadee near the Olentangy. Ten chickadees in all were banded on Interpont. Two were a pair, and they came occasionally, with their red and yellow, green and red celluloid rings, winter, spring, and fall, always together, for three years.

A few juncos were appreciative guests. My first capture was made at 8:52 on a snowy February morning. My bird, a very dark male, was a philosopher, continuing his meal in the trap. When I approached, he said *pit pit pit pit,* then was silent. Three minutes after I banded him he was back under the shelf, eating and scratching with both feet. At 9:35 he was again in the trap. Another junco I caught pecked me, an unusual occurrence.

The real peckers, besides the cardinals, were the tufted tits. Each capture was a new adventure. When I caught my second tit that first winter, it uttered a variety of high, shrill squeaks and harsh squawks and bit me viciously. One day I heard a commotion at the trap and there was a tufted tit inside and a friend on top, screeching and jumping up and down. A month later one was trapped, while two friends clung to the outside with spread tails, all three chattering and scolding.

In February 1929 I caught my first Tree Sparrow, and the only one that year. Eleven months later I was walking north of the house, looking at my banded birds—two juncos and a song sparrow—when to my amazement I noticed a band on a tree sparrow. That afternoon he entered the trap; he was A124098, my bird of last year. It is a wonderful sensation to welcome back the very bird that visited one a year before. The next winter he did not come to the trap by the house, but to my delight I found him in a trap set for song sparrows a quarter of a mile to the north.

Once I caught a pair of Carolina wrens at one pull of the string. They escaped into the living room as I was trying to weigh them; they flew easily and gracefully about, not banging themselves madly into the windows as song sparrows have done under like circumstances.

Two or three blue jays were regular visitors each year, the attraction being suet and sunflower seeds; they usually swallowed these whole, but occasionally took them from the shelf, held them with both feet and hammered them open. Once when the drinking water was frozen, a jay

pecked at it until he had made a hole and then took many drinks. Another time I had caught an English sparrow in the trap, but before I got out to remove it, here came a jay and hopped all over the trap screaming, apparently protesting because the wretched sparrow was monopolizing the feast. I removed the captive and in three minutes the jay was eating his fill.

Some of my banded jays nested on Interpont; in late March and April I would see the male feeding his mate and both birds carrying nesting material. I noted jays darting at a sparrow hawk and hitting a crow on the back, while fracases with robins were every day occurrences.

One of our most famous patrons arrived in January 1936; a juvenile white-crowned sparrow sang charmingly around the house, and at the feeding shelf was tyrannical to the English sparrows and juncos. Before long I caught him; I examined him carefully, comparing him with pictures in all my books. He certainly looked less like a white-crown than a Gambel's. The difference is clear in the adult; in the Gambel's the white line over the eye is continuous to the bill, whereas in the white-crown the space between the eye and bill is black. In young birds with their dark red-brown and light buff-brown head stripings, the distinction is not easy. The exciting point was that the white-crown, although rare in Ohio in winter, was common as a spring and fall transient, while Gambel's sparrow was excessively rare at any season.

I carried my valuable bird to the Ohio State Museum, where Edward S. Thomas compared it with skins in the collection and decided it must be a Gambel! I wrote the great news to all my ornithological friends; and exhibited my prize to the Wheaton Club, much to the interest and edification of the members.

"Gambel" continued to be the most distinguished guest of our feeding shelf that bitter winter, delighting us with his sweet singing. One day he and a song sparrow had a fight; Gambel was victor. I noted him eating gobs of snow.

The first of February we had another distinguished visitor—Dr. Erwin Stresemann from Berlin. The feeding shelf fascinated him; it was indeed a treat for him to view cardinals at such close range and to hold in his hands live juncos and tree sparrows—his first view of this last species. Finally Gambel entered the trap; we compared him with pictures and descriptions in all the authorities and Dr. Stresemann agreed with our diagnosis of *Zonotrichia leucophrys gambeli.* A week later, when I had caught my handsome sparrow again, Mrs. Laura Lovell, an enthusiastic bird observer, took a taxi to come out to view the rare creature, a new record for her life list.

The middle of March, what should Gambel do but start pestering two of the song sparrows that were proclaiming territory in and near our

garden. Whenever one of them flew up and sang, Gambel followed, drove him off and sang there himself!

He stayed until May 3, continually pleasing us with his pretty songs. But before he left I made a dreadful discovery. On April 21st I caught him for the eleventh time; his crown was molting, but *not in the way we had expected.* I hurried him over to the museum to consult with Mr. Thomas. It was only too plain that our cherished "Gambel" was turning into a white-crown!

April Rain, by Samuel A. Harper

How unlike November rain is the rain of April. It is like milk to a babe or food to a convalescent. The greening hills of April seem exuberantly extravagant of rain. Nature has become unthrifty and prodigal and lavished herself upon the waiting fields and hills until they have grown lush with misty green. The spring rain has all the ardor of wastefulness and unrestrained abandon. There is an ecstatic joy in the rain-drenched hills of April.

April rain is the inspiration for all the green in the tremulous spring foliage. What would the chlorophyll do without it? All the new vegetation floating in the rain is super-luxuriant abundance. Rain is plenty, drought is penury. Rain is life, drought is death. Our bodies are ninety per cent water, and so it is with all living things. Swinburne said that the sea is the lover and mother of men. Water is the great loving, primal element from which all living things have come.

This is the musical message of the April rain.

Even the wet sticks which I have brought in and put on the fire give out a livelier heat because of the rain.

Museum Activities

Underwood & Underwood

Nathan S. Davis, M. D., President

George Nelidoff

James P. Simonds, M. D., Vice-President

Annual Meeting

The 88th Annual Meeting of the Academy, held on the evening of April 6, 1945, was devoted entirely to business matters; there was no guest speaker. After reports by the treasurer and director of the museum, a number of outstanding scientists were elected Honorary Life Members and Fellows of the Academy. Four new Annual and thirty-two Associate Members were also elected (see below). An application of the Burnham Astronomical Society for affiliation with the Academy was approved.

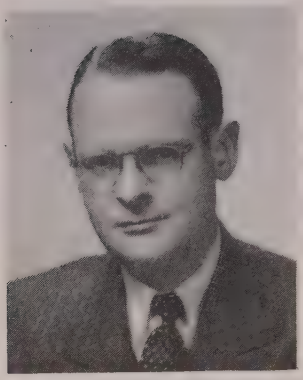
The following officers were elected: President, Dr. Nathan S. Davis; First Vice-President, Dr. James P. Simonds; Second Vice-President, Kenneth A. Reid; Secretary, Nat T. Burfeind; Trustee for five years, Burt A. Massee; Scientific Governors for three years, Dr. John R. Ball and Dr. Charles E. Olmsted. Walter A. Grau was re-elected Treasurer by the Trustees at the annual meeting of this board on May 3.

The Academy regrets that Alton S. Windsor, who served efficiently as secretary for four years, has removed from the city. His successor, Mr. Burfeind, is a member of the law firm of Garnett and Garnett.

Kenneth A. Reid, Vice-President

Academy Receives Bequest

The Treasurer has been notified that the late Isabelle Hollister Martin (Mrs. Franklin H. Martin) bequeathed to the Academy the sum of one thousand dollars in memory of her father, John Hamilcar Hollister, M. D.



Koehne Studio

Nat T. Burfeind, Secretary

Koehne Studio

Walter A. Grau, Treasurer

New Members

The following were elected at the 88th Annual Meeting, April 6, 1945:

Fellows: Warder Clyde Allee, Anton J. Carlson, and Fay-Cooper Cole, University of Chicago; Leslie B. Arey and Andrew C. Ivy, Northwestern University Medical School; Thomas Barbour, Museum of Comparative Zoölogy, Harvard; David Fairchild, Coconut Grove, Fla.; Carl L. Hubbs and Francis B. Sumner, Scripps Institution of Oceanography; Alexander Petrunkevitch, Yale.

Honorary Life Members: William Beebe, New York Zoölogical Society; Stanley A. Cain, University of Tennessee; Arthur M. Chickering, Albion College; Roger Conant, Philadelphia Zoölogical Garden; Nathan S. Davis, Chicago; Emil Liljeblad, Indianapolis, Ind.; Edwin Lincoln Moseley, Bowling Green State University, Ohio; Alton S. Windsor, Bloomington, Ind.

Annual: Miss Ida M. Johnson, Nat T. Burfeind, Kenneth A. Reid, and Charles E. Olmsted, Chicago.

Associate: Ernest T. Bennett, Miss Louise K. Broman, Miss C. Carter, James Cornelio, William Darnall, Mrs. A. Froehling, Lester V. Jorgensen, Miss Norma L. King, Drexel W. H. Kyle, John Malitsch, Auguste Mathieu, Mrs. Mary Miller, Mrs. Margaret M. Nice, William Parrish, Miss Clara Peterson, Miss Mary Rankin, Miss Mary Riordan, Horace K. Rogers, Miss Ethel Rowe, Paul Sauer, Mrs. A. O. Schnura, Mrs. C. Steiner, George D. Steinert, Miss Laura Stromberg, Carl Svenson, Herbert Weintzn, Anthony Willow, and Leopold Zupan—all of Chicago; H. A. Drechsler and William Sandberg, Oak Park; Miss Marjorie Day, Wilmette; and M. B. Foster, Orlando, Fla.

Astronomical Society Affiliated with the Academy

The Burnham Astronomical Society, affiliated with the Academy on April 6, 1945, was organized in 1940 as a consolidation of the Amateur Telescope Makers Association with other astronomers, both amateur and professional, of Chicago and vicinity for the promotion of interest in astronomy among residents of the Chicago area. J. Madison Showalter is president and Miss Winifred Sawtell, secretary. The group has held meetings at the Academy during the past several months and is growing rapidly in attendance and membership. At the meeting of May 8, Wagner Schlesinger, director of the Adler

Planetarium and Astronomical Museum, presented an illustrated lecture, "Receding Horizons – Man's Expanding Conception of the Universe."

The society now meets regularly at the Academy at 8:00 P. M. on the second Tuesday of each month. Anyone interested in astronomy is cordially invited to attend. A regular feature of the meetings is a report on the evening sky for the month. Weather permitting, telescopes are usually set up in front of the Academy building before and after the meeting for observations of particular interest on that date.

Spring Series of Movies for Children

The third spring series of nature movie programs for children was presented at 10 o'clock in the Academy auditorium on Saturday mornings from April 21 through May 26. These programs, designed for young people of school age and built around natural history subjects, consisted of both recreational and educational sound films, many of them in color. An animated cartoon appropriate for the day's nature topic closed each program.

April 21. *The Amazon Awakens*
Cartoon: "Grandpappy Monkey's Busy Day"

April 28. *Life Under the Sea*
Cartoon: "Down in the Deep" with Puddy the Pup

May 5. *Water—Master-Engineer*
Cartoon: Disney's "Water —Friend or Enemy"

May 12. *All About Bears*
Cartoon: "Andy Pandy Goes Fishing"

May 19. *Summertime*
Cartoon: "Mollie Moo Cow and the Indians"

May 26. *Deserts Aren't Dead*
Cartoon: "Aladdin's Lamp"

At the close of each motion picture program, young people and adults interested in nature study in the field, met on the Academy steps for a Nature Walk through Lincoln Park, sponsored by the Illinois Audubon Society. On May 12 an early morning Warbler Walk was substituted for the regular 11 o'clock trip.

Bird-banding Conference

The fifth annual Chicagoland Bird-banding Conference was held on Sunday, April 15, under the joint sponsorship of the Wm. I. Lyon Bird-banding Council and the Academy.

The program, arranged by a committee under the chairmanship of Paul E. Downing, consisted of short papers and color motion pictures of general interest to students of wildlife. The evening session was devoted to a lecture, *Wild Birds at a Sanctuary* (illustrated with Kodachrome movies), by Dr. Miles Pirnie, director of the W. K. Kellogg Bird Sanctuary at Battle Creek, Michigan.

Signs of Spring Exhibited in Lobby

From the first pussy-willows and valiant shoots of skunk cabbage in March to the waterlilies and roses of June, Chicago's springtime is a crescendo of deepening green, of exuberance of bird-song and bustle of nesting activity, each week bringing its "landmarks" of spring's advance. These progressive *Signs of Spring* —wild-flower pictures in color, birds and nests —are displayed in the lobby of the Academy's museum. They are arranged in chronological groupings according to average blooming date or date of arrival in Chicagoland from late March to mid-June.

Audubon Society's Lecture Season Ends

The last two in the 1944-45 series of evening lectures sponsored by the Illinois Audubon Society were presented by Dr. Alfred M. Bailey of the Colorado Museum of Natural History on March 27 and by Dr. Olin S. Pettingill, Jr., of Carleton College on April 13. Dr. Bailey's colored motion picture was titled "High Country," Dr. Pettingill's, "Everyday Wildlife (Growing Feathers)."

The Naturalist's Book Shelf

Foundations of Plant Geography

By Stanley A. Cain

Harper and Brothers, New York, 1944, xiv, 556 pages, 63 figures, glossary, literature cited, index. $5.00.

This is not an elementary treatise but rather a technical searching for the factors which determine the way plants are distributed upon the earth. From significant investigations to date in ecology, systematics, cytology, genetics, and paleobotany (in the last named category, often his own) the author interprets dynamic plant geography. He holds that the whole available history of plants in terms of their expressed and potential geography is never static.

This book is not for the neophyte. The disciplines necessary for understanding changes that occur with the slightest modification of an intraneous or extraneous factor are involved and profound. The author proceeds at once to consideration of the validity of assumptions and conclusions upon which explanations have been based. Organization is clean-cut; whenever appropriate the chapter opens with statements which are to be elaborated upon, principles are weighed and if sufficient evidence can be adduced, passed upon.

The book opens with a treatment of the tenets of plant geography followed by a critical evaluation of judgments necessary to the study of paleoecology. In the long section on areography, area, the "entire region of distribution or occurrence of any taxonomic unit, or the region of occurrence of any plant community," is treated as a dynamic entity. In it are chapters on origin, center, endemism, species senescence, and the controversial problem of polyphylesis. Part Four treats of evolution and plant geography utilizing data gathered from world flora and cytology. The final section examines the significance of polyploidy in plant geography; facts obtained by geneticists and cytologists on the former help to solve problems in the latter.

There is an extensive glossary—which is, unfortunately, an essential *vade mecum* in ecology. Literature cited comprises 720 items.

The book is both stimulating and convenient; facts from pertinent fields of inquiry have been used with a nice sense of proportion. It warrants being considered a classic in approach and significance in plant geography.

Anna Pedersen Kummer

The Illustrated Encyclopedia of American Birds

By Leon Agustus Hausman

Halcyon House, New York, 1944, xix, 541 pages. $1.98.

One great stumbling block in amateur bird study is the matter of subspecies. Years ago in Oklahoma I tormented myself trying to decide whether I was looking at the eastern or western form of a sparrow, for according to Reed's *Bird Guide* one was paler and larger, the other smaller and darker. What a shock it was to me later to view series of various species in museum drawers and still not be able to see any appreciable difference! The A. O. U. check-lists have been much to blame in bestowing English names on subspecific forms that give no inkling as to which species a bird belongs. Peterson in his *Guide to Western Birds* (1941) solved the harrassing problem by using the species as the unit, with subspecies listed under each species, usually with the notation "no apparent field differences."

Instead of following this excellent example, Dr. Hausman's treatment in his "Encyclopedia" makes confusion worse confounded. The alphabetical arrangement not only presents on the same pages

birds of the most diverse orders, but each subspecies is treated, not under its species, but according to its English name (Alaska Wren, Alberta Marsh Wren, Aleutian Wren, etc), while distinctions between subspecies are more emphasized than in my old copy of Reed that led me so badly astray. To be sure, scientific names are given and also the family, but the beginner has scant interest in Latin nomenclature. Often one subspecies is said to be "similar" to another subspecies, "but larger and grayer," or "smaller, and more thickly spotted," etc., etc. But this clue to specific identity fails us when we learn that Bachman's sparrow is "similar to the lark sparrow," while the pine-woods sparrow isn't similar to anything; the Rio Grande Meadowlark is "similar to the western meadowlark," and the Zenaida dove is "similar to the eastern mourning dove"—two different genera! These instances are merely samples of mis-statements that abound in this "authoritative encyclopedia."

Most of the book is devoted to brief descriptions of the 1422 forms mentioned in the A.O.U. check list, with a statement as to range (often misleading, as in the case of the white-tailed kite, Harris' sparrow, Kirtland's warbler, and many others), and something as to notes, habitats and habits, while a short account is given of structure and nesting of each of seventy-five families. Many of the 700 pen sketches by Jacob Bates Abbot are excellent, but in others the birds look rather dumpy. Final sections include "A Systematic or Classified List of North American Birds," twenty-nine pages on "Other Names of North American Birds," an "Index of Scientific Names of Families" and an uncritical list of eighty-eight "Books Useful to the Layman in the Study of Birds."

Theoretically, perhaps it should be helpful to have in one volume descriptions of every bird reported for North America north of Mexico. This volume, however, full of errors, with its incredibly bad arrangement and the false impression it gives that the minute differences between most subspecies are things of importance for the field worker, is another candidate for our already crowded field of worse than useless bird books.

Margaret M. Nice

Down to Earth

By David Greenhood

Holiday House, New York, 1944, vii, 262 pages, numerous figures. $4.00.

Down to Earth is a book about maps. Such books commonly are called cartographies, and treat map materials largely from a technical or mathematical viewpoint, for specialists. Greenhood, however, has made his map materials come alive through a humanistic and witty approach. Although his book is intended for the intelligent layman, whose point of view is kept always in mind, the professional cartographer will appreciate the vitality and common sense with which the science of maps is treated.

The reader is never allowed to feel that maps are abstract, mathematical devices. Instead, Greenhood leads his reader from familiar, commonplace things to the cartographic concepts that they illustrate. Coordinates of location are illustrated by counting fence posts in one's own back yard; parallels of latitude by penciled lines on a spinning ball; contours by the water lines left by an imaginary Noachian flood. Such engaging devices lead the reader into an amazing amount of sound, practical information. For example, one learns the Township and Range survey system of the United States General Land Office; how to compute time and date on all portions of the earth's surface; the curvature of the earth's surface; scale; direction; the use of the watch or sundial as a compass; the way to locate oneself or a distant point on a map; the methods of determining elevations both on land and beneath the sea, and modes of showing these on maps. The difficult (to the layman) subject of map projections becomes understandable, and even fascinating, as Greenhood explains their desirable properties, and then shows how the

commonly used projections must represent compromises or choices between these properties. However, Greenhood's treatment is non-mathematical and does not serve as a guide for the construction of map projections.

The second part of the work deals with methods of assembling and compiling map data, and with the actual construction of the map itself. Symbols, lettering, and the use of special sketching methods give the reader a fine appreciation of what a map is and stands for. A section on ground mapping methods and the use of the plane table will be very helpful to him who cares to make his own survey. A final section deals with sources of maps and map materials. The layman will be astonished to know how much is readily available to him through governmental agencies, scientific societies, and publishers. Comments on drafting equipment, and an appendix of useful conversion tables complete the book.

Mention must be made of the many excellent sketches and line drawings by Ralph Groeter, which add much to the effectiveness of the book.

Your reviewer considers *Down to Earth* a timely contribution to cartography, which should foster interest in and an appreciation of this heretofore rather specialized science. Some readers may wonder at the name of the volume, which is also the title of the widely-used work on geology published in 1936 by Croneis and Krumbein.

William E. Powers
Northwestern University

Studies in the Life History of the Song Sparrow II

The Behavior of the Song Sparrow and other Passerines

By Margaret Morse Nice

Transactions of the Linnaean Society of New York, vol. 6, 1943, viii, 328 pages, 6 figures, bibliography, index. $2.00.

To give the prospective reader an idea as to what has gone into the making of this book the reviewer is tempted to deal largely in figures. In 22 summarized chapters (and there are 26 tables) Mrs. Nice presents, in this her second volume on the song sparrow, the life history of that species. Each chapter is concerned with a single phase of that history, clarified by the use of an exact method. Chapter IV, "Innate and Learned Behavior in the Young Bird," will serve as an example. The subjects treated in the chapter are: A. Instinctive Activities, B. Conditioned Actions, C. The Matter of Play. For further division, B. Conditioned Actions, for example, is treated in sections: 1. Responses to Food, 2. Responses to Water, and so on.

Indicative of the volume of data obtained by the author, in which must have been a tireless devotion to her subject, is the table given in the chapter which discusses the activities of the young bird and the order of their maturation. There are 59 activities for the song sparrow, 37 for the common redstart, 27 for the cowbird, 21 for the catbird, and 18 for the ovenbird. This table, by the way, shows that in representatives of five passerine birds the order in which these various activities appeared was substantially the same.

Although the song sparrow is Mrs. Nice's chief "guinea pig," her experiments have included seven other species of passerines—five North American and two European. Besides, she has referred to more than 400 species of birds and her citations are from the works of nearly 400 writers in the numerous fields of zoology. All this is to help us answer (Chapter I), "How are we to look upon birds? Are they reflex machines, or human beings in miniature? Or do they fall somewhere between these extremes? How do birds communicate with each other since they lack articulate speech? How can they carry out exceedingly complex processes, that would seem to call for foresight and planning, showing a certain amount of adaptability, yet at times fail utterly to grasp the situation when confronted with somewhat changed conditions?"

Whether the reader is able to answer these questions or not, he will find it

fascinating, out of his own observations and experiences, to appraise for himself the character of a given "signal": Was it innate or learned? He will find it difficult always to be sure. Similarly, out of the hundreds of examples of behavior given in this volume he will find absorbing matter for speculation. At the last, however, one feels that he will agree with Mrs. Nice that "the basic needs of all life are the same," and with her evident agreement with Dr. Lorenz that "the study of animal behavior is the only and ultimate source of understanding ourselves."

E. R. Ford

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By

Verne O. Graham, Ph. D.
Honorary Curator of Mycology
Chicago Academy of Sciences

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The illustrations, 868 figures in 49 plates, were carefully drawn under the supervision of the author and handsomely printed by collotype.

Published jointly by the Academy and the Chicago Natural History Museum (formerly Field Museum), vii + 390 pages, 49 plates, paper cover, June, 1944. Price $4.10 postpaid in U. S.

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